Water Park Project Kit

Congratulations! You're going to a water park! Use these project ideas to enrich your educational experience in the park. Read through them before you go to make sure you understand the terms and concepts, and to help you determine if you want to expand upon any of them. You'll find fun facts and printable worksheets at the end of this packet.

a- elementary level activity b- middle school level activity c- high school level activity

Language Arts

Water parks have a lot to do for people of all ages. Be observant and be prepared to write a report on your visit.

a. Draw a basic diagram of the park and label all of the areas including the ages those areas appeal to. Circle your favorite one and tell why.
b. Choose one attraction to do your report on. Detail five specific details of the attraction, like estimated height, paint condition, queue condition, etc. Conclude your report with a recommendation for improvement.
c. Create a report on the types of rides at the water park, who likes to ride them and why. Choose three rides to give more details on including their size, age limits, color, exciting parts, etc.

Materials required: Notebook, pen/pencil
Submission: A copy of your writings/drawing, and any pictures/videos

Teaching or learning notes:

Applied Math

Math is everywhere! Every single attraction at a water park is created using math. Take a look around and find examples of the math you know.

a. Identify and draw the shapes that you see and where you see them. See if you can find places where simple math equations were used. Document your findings.
b. Identify the math used to create one particular feature in the park. Outline the concepts and principles you see.
c. Identify the math used to create one particular feature in the park. Outline the concepts and principles, and use estimation to perform one of the calculations the builders would have used.

Materials required: Notebook, pen/pencil, calculator or smartphone (optional)
Submission: Your calculations, estimations, and conclusions, and any pictures/videos

Teaching or learning notes:

Science

Check out the physics of water slides! All ride designs utilize the principles of Conservation of Energy, inertia, friction, potential and kinetic energy, and gravity. What makes the fast slides fast? Why do sliders slow down when they are going uphill? Why do you get flung from side to side around corners? What is inertia and what affect does it have on slide physics? How do slides use potential and kinetic energy to keep them going? How is energy “conserved” during the slide? What parts do friction and gravity play? What are Newton’s three laws of motion and can you see them working on the slides? How does water change the slide’s physics?

a. Discuss some of the simpler concepts and try feeling the forces at play on some slides. Compare slides to one another and talk about what goes into building them. Draw one of the slides.
b. Discuss the concepts and identify as many physics concepts as you can on some slides. Compare slides, and then pick one slide at the park to diagram/map and include the forces you can identify to define how that slide works.
c. Discuss the concepts, identify them on some slides, and diagram one of them including its use of physics. Design your own slide using the things you’ve learned.

Materials required: Notebook, pen/pencil
Submission: A copy of your drawings, diagrams, maps, or designs, and any pictures/videos

Teaching or learning notes:

Social Studies

Water parks are a great place to people watch and learn more about how people interact with one another. Take some time to watch people in line for a slide or for food, around the free play areas, or in families.

a. Notice how many people are in the park. Are some areas more crowded than others? How does behavior change in the crowded areas versus the non-crowded areas? Do people crowd together or spread out? Why? Discuss these ideas and draw or write about them.
b. Identify one behavior that you thought was kind, and one that you thought was rude. What was the response to that behavior? Write about your findings including where you saw the interaction and the details of the event.
c. Discuss crowd control and analyze the layout of the park. How does park layout affect how people move and behave? Discuss the things you've seen in light of larger social environments you've been in. How universal are these techniques of managing people to improve experience? What are your ideas for improving guest experience at the park?

Materials required: Notebook, pen/pencil
Submission: A copy of your writings/drawings, and any pictures/videos

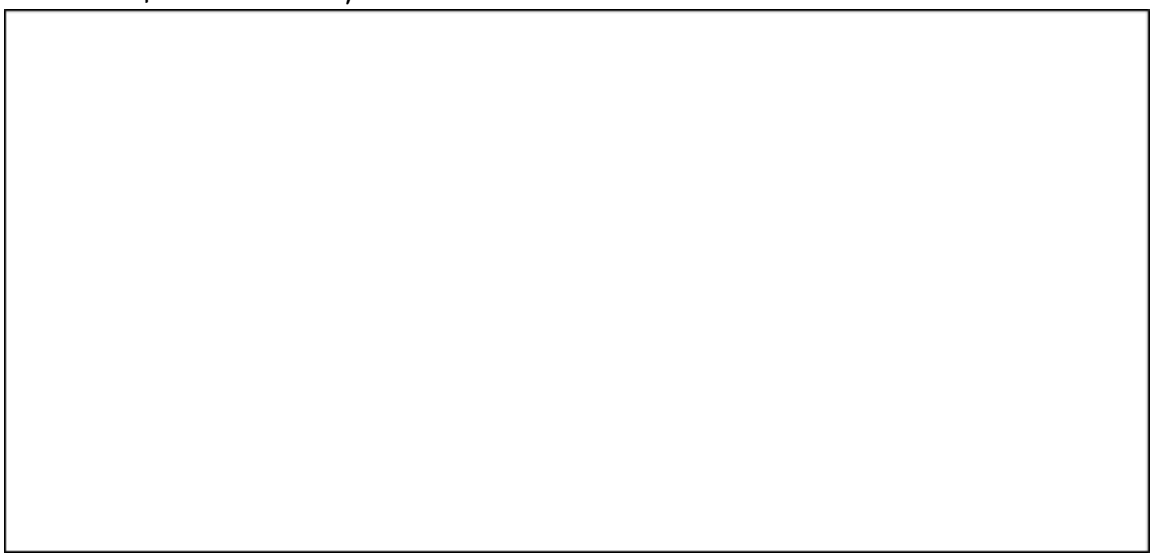
Teaching or learning notes:

Fun Facts

- Water parks have grown in popularity since their introduction in the late 1940s and early 1950s. The United States has the largest and most concentrated water park market, with over a thousand water parks and dozens of new parks opening each year.
- From 2000's, popular water parks were disclosed by long wait line problems of attractions. To solve this problem, some water parks adapt conveyor belt to lift passengers or use water jets.
- People in Africa and Asia have to walk an average of 3.7 miles to collect water.
- The average toilet uses 1.6 gal of clean water in a single flush.
- Only 1% of the world's water is drinkable. 90% of the world's fresh water is in Antarctica.
- A new water-creating billboard in Peru helps tackle a serious problem — as well as projects a message of hope — in an area that's long-faced water insecurity issues. The billboard system uses reverse osmosis, a water purifying process, and then stores the water in tanks that hold 20 liters each. The water is dispensed at the bottom of the structure, which has provided 9,450 liters in three months, according to the school.
- Your bones are 31% water.
- You may have heard that water conducts electricity, but really water is a poor conductor. It is the impurities in the water (minerals and metals) that conduct the electricity.
- Cold water is heavier than hot water.
- Two teams of astronomers have discovered the largest and farthest reservoir of water ever detected in the universe. The water, equivalent to 140 trillion times all the water in the world's ocean, surrounds a huge, feeding black hole, called a quasar, more than 12 billion light-years away.
- The probability that you, in any glass of water, will find at least 1 molecule of water once drunk by Cleopatra is practically 100%. (http://mathematics.bigparadox.com/water-s.asp)
- Giraffes can go longer without water than camels can.
- The United States uses less water now than it did in 1970.
- It takes about 50 glasses of water to grow the oranges to make 1 glass of orange juice.
- California's interconnected water system is the world's largest, managing over 40,000,000 acre feet of water per year.

Water Park

1. Draw a picture of your favorite slide.



2. Describe your favorite slide and why you love it.

3. Which waterslide is the fastest? The tallest?

4. Draw or describe one example of engineering you saw.

5. Draw a simple replica of the park map including some labels.

6. What is inertia and when do you experience it?

BONUS:

Explain how an engineer uses math to design and build a water slide. What kind of math do they use? Why is it important that they are accurate?